EXHIBIT A

WEB POLICY

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DO NOT TRACK, MEASUREMENT, PRIVACY

Safari Trackers

Apple's Safari web browser is configured to block third-party cookies by default. We identified four advertising companies that unexpectedly place trackable cookies in Safari. Google and Vibrant Media intentionally circumvent Safari's privacy feature. Media Innovation Group and PointRoll serve scripts that appear to be derived from circumvention example code.

In the interest of clearly establishing facts on the ground, this post provides technical analysis of Safari's cookie blocking feature and the four companies' practices. It does not address policy or legal issues. (More on that soon.)

Before proceeding further, I want to thank the countless friends and colleagues who provided invaluable feedback on this project. In particular: , whose insights have been vital at every step, and Ashkan Soltani, whose crawling data was instrumental in uncovering PointRoll's practices and understanding the prevalence of cookie blocking circumvention.

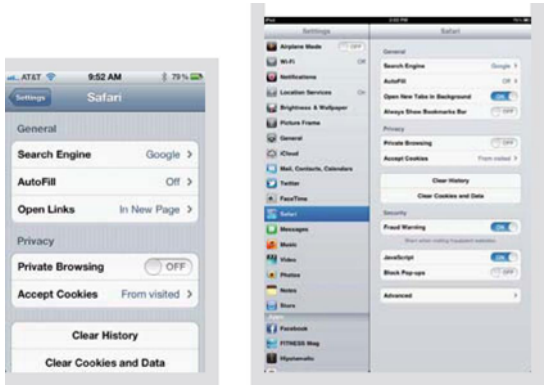
Third-Party Cookie Blocking in Safari

Every popular web browser, save Opera Mini and the Android built-in browser, includes a "third-party cookie blocking" privacy feature. (The remainder of this post uses the term "cookie blocking" for brevity.) These options share a common high-level purpose: impose limits on cookies from "third-party domains," that is, domains that differ from the "first-party domain" in the browser's URL bar. In practice, however, implementations vary substantially; for (slightly out-of-date) specifics, see the Center for Democracy and Technology's 2010 Browser Privacy Features report and Google's Browser Security Handbook.

Safari's cookie blocking feature is unique in two ways: its default and its substantive policy.

Unlike every other browser vendor, Apple enables cookie blocking by default. Every iPhone, iPad, iPod Touch, and Mac ships with the privacy feature turned on

Default Privacy Settings in Desktop Safari



Default Privacy Settings in iPhone and iPad Safari

Apple advertises cookie blocking by default as a benefit of choosing Safari

> Some companies track the cookies generated by the websites you visit, so they can gather and sell information about your web activity. Safari is the first browser that blocks these tracking cookies by default, better protecting your privacy. Safari accepts cookies only from the current domain.

Apple's cookie blocking policy is less restrictive than many competing browser vendors.[1]

- **Reading Cookies** Safari allows third-party domains to read cookies
- **Modifying Cookies** If an HTTP request to a third-party domain includes a cookie, Safari allows the response to write cookies **.**
- **Form Submission** If an HTTP request to a third-party domain is caused by the submission of an HTML form, Safari allows the response to write cookies. This component of the policy was removed from WebKit, the open source browser behind Safari, seven months ago by Google engineers. Their rationale is not public; the bug is marked as a security problem. The change has not yet landed in Safari

These allowances in the Safari cookie blocking policy enable three potentially undesirable behaviors by advertising networks, analytics services, social widgets, and other "third-party websites."

- If a company operates both a first-party website and a third-party website from the same domain, visitors to the first-party website will be open to cookie-based tracking by the third-party service. Yahoo! is an example: it hosts both first-party websites and third-party advertising services on the yahoo.com domain
- If a third-party website's content ever manages to load in a full browser window, the website can set cookies on its domain. An advertising company, for example, could set tracking cookies on its domain with a pop-up, pop-under, or temporary redirect (e.g. when a user clicks an ad)

- A third-party website can use JavaScript to submit a form in an iframe without user interaction

This post focuses on the last behavior. We discovered four advertising companies that surreptitiously submit a form in an invisible iframe and place trackable cookies in Safari: Google, Vibrant Media, Media Innovation Group, and PointRoll. The balance of the post details each company's business practices

Google

Google has, historically, operated most of its first-party websites on the google.com domain and most of its third-party services on other domains. For example: Google Analytics is served from google-analytics.com, Google software libraries are hosted at googleapis.com, Google static content is at gstatic.com, and Google's advertising services are on doubleclick.net.

Separating first-party websites from third-party services improves security: interactions between google.com content and other websites could introduce vulnerabilities. The domain separation also benefits user privacy: Google associates user account information with google.com cookies. By serving its third-party services from other domains, Google ensures it will not receive google.com cookies, and therefore will not be able to trivially identify user activities on other websites.

But what about when Google *does* want to identify the user on a non-Google website? Social personalization requires[2] just that! Google has two design options.

First, Google could embed google.com content on non-Google websites. This is the approach it has taken with its social sharing widgets; both the (defunct) Buzz button and the +1 button load resources from google.com.

Second, Google could synchronize information from its google.com domain to another domain, a process called "cookie syncing" in online advertising lingo. This is the approach Google took with youtube.com after it acquired YouTube. And this is the approach Google settled on for social personalization of doubleclick.net display advertising. Google announced the +1 button for display ads last September; here are the steps in the underlying cookie syncing technology, based on conversations with Googlers and an explanatory document that Google provided.

A display advertisement includes the cookie syncing mechanism's iframe, located at http://googleads.g.doubleclick.net/pagead/drt/s. We observed the iframe load in both desktop and mobile display ads. Here are example ads that included the mechanism, from the Washington Post (Safari on Mac OS X) and MSNBC (Safari on iPhone).

Google Ads Including the google.com —» doubleclick.net Cookie Syncing Mechanism

We also saw what appeared to be a special use of the mechanism on youtube.com, where Google placed an invisible advertisement in the footer that included the cookie syncing iframe.

In a FourthParty crawl of the homepages of the Alexa U.S. top 500 websites, we detected the cookie syncing mechanism on 39 pages. This figure likely underestimates the prevalence of Google's cookie syncing code since many websites show less advertising on their homepage. We observed the mechanism on New York Times and MSNBC article pages, for example, but not on their homepages.

2. The iframe loads a page that contains a meta refresh to http://google.com/pagead/drt/ui.

```
<!DOCTYPE HTML PUBLIC>
<html>
  <head>
    <meta http-equiv="refresh"
content="0;url=http://google.com/pagead/drt/ui" />
  </head>
</html>
```

   Apologies for any overflow; here and throughout the post I err on the side of preserving original formatting.

3. The response at http://google.com/pagead/drt/ui depends on whether the user is logged into Google. If the user is not logged in, the response includes a Location header that directs the browser back to googleads.g.doubleclick.net with some information in the p and ut parameters of the Request-URI.

```
Location:
https://googleads.g.doubleclick.net/pagead/drt/si?
p=CAA&ut=AFAKxlQAAAAATzuSTM-
wZva6TmRV_FF7YdF2nggZfnlI
```

   If the user is logged in, the response directs the user to Google's authentication service.

```
Location:
https://accounts.google.com/ServiceLogin?
service=doritos&passive=true&go=true&continue=http
s://googleads.g.doubleclick.net/pagead/drt/si?
p=CAEY9cLA-gQ&ut=AFAKxlQAAAAATz2v-
fyl5V0PcBdEsvg95beKTozmJSql
```

The authentication service then directs the user back to googleads.g.doubleclick.net.

(A quick explanation of the “Doritos” reference—as I understand it, that’s Google’s internal codename for social personalization of third-party display advertising.)

```
Location:https://googleads.g.doubleclick.net/pagead/drt/si :
p=CAEY9cLA-gQ&ut=AFAKxlQA7\A7\ATz2v-fyl5V0PcBdEsvg95beKTozmJSql&pli=l&auth=DQAAAIUAAAAPNIlph4K8ZDuUPlslr38CnSgqvc7E26I5RwkOrDDU7r81Q8H6iVYltrf4TEcEl
hHVwMHQojKjOSSkQxQIIvetbMiMIOTcK88Ltq7Td9rQHLHJ QrNb7EDz727XUM
```

Google’s documentation suggests that the p and ut parameters include an encryption of the user’s login state and, if logged in, account ID. (The Google design document makes a number of technical claims about how the syncing mechanism preserves user privacy. This post does not address those claims.)

4. In a browser other than Safari, the response sets a “_drt_” social personalization cookie on .doubleclick.net. If the user is not logged into Google, the cookie’s value is “NO_DATA”, and the cookie is set to expire in 12 hours.

```
set-cookie: drt =NO DATA; expires=Fri, 17-Feb-2012 13:37:41 GMT; path=/; domain=.doubleclick.net; HttpOnly
```

If the user is logged into Google, the “_drt_” cookie contains an encryption of the user’s Google account ID, set to expire in 24 hours.

```
set-cookie: drt =AFkicjesF-jVECSOLRa1a-hf14FYVKIPEu4goDlxZZdVaxh1D4gDfJ6dvZq7Evnr2C8MluBSk6Nkr8TfL1ksojSb8qsjYHSNMQ; expires=Sat, 18-Feb-2012 01:25:10 GMT; path=/; domain=.doubleclick.net; HttpOnly
```

My understanding is that the cookie expirations are set to limit syncing frequency. If the user was not logged in at last sync, a sync will not be attempted for at least 12 hours; if the user was logged in, a sync will not be attempted for at least 24 hours.

In early testing, we a noticed a “PREF” cookie was sometimes set at the same time as the “_drt_” cookie.

```
set-cookie:PREF=ID=5a7be344032983bc:TM=1325643281:LM=1325643281:S=-BWpqDzbE7gq8rg-; expires=Fri, 03-Jan-2014 02:14:41 GMT; path=/; domain=googleads.g.doubleclick.net
```

> The behavior appeared to stop before we contacted Google about our findings. We have not received information from Google explaining the “PREF” cookie on googleads.g.doubleclick.net. It appears to have the same format as the “PREF” cookie on google.com and the same two-year expiration.

So far, a (relatively) straightforward cookie syncing mechanism. But we noticed a special response at the last step for Safari browsers. We tested 400 User-Agent strings to verify that this is a special case; a spreadsheet of results is available.

Instead of responding with the “_drt_” cookie, the server sends back a page that includes a form and JavaScript to submit the form (using POST) to its own URL.

```
<html>
<head></head>
<body>
<form id="drt form" method=post
action="/pagead/drt/si?p=CAA&amp;ut=AFAKxlQAAAAATz
uSTM-wZva6TmRV FF7YdF2nggZfnlI"></form>
<script>
document.getElementById('drt form').submit();
</script> </body>
</html>
```

The response to the form submission then includes the Set-Cookie header for the “_drt_” cookie.

Recall that if a cookie is sent with an HTTP request, Safari’s blocking policy will allow the response to write cookies. Owing to the “_drt_” cookie, all doubleclick.net content is now immunized from Safari’s cookie blocking policy. The next time Google advertising content attempts to install the “id” tracking cookie for .doubleclick.net, it will successfully set. That next attempt may not even require that the user visit another page: We noticed that many Google ads periodically send requests to doubleclick.net, especially to a URL with the base http://ad.doubleclick.net/activity. A response to one of these requests can include a Set-Cookie header for the “test_cookie” cookie, which Google uses to make sure cookies successfully set (presumably to avoid wasting IDs and associated resources). A response to a subsequent request may then include a Set-Cookie header for the “id” cookie.

We confirmed that Google’s doubleclick.net “id” cookie was functioning in Safari by observing behavioral interest categories appear in Google Ads Preferences. Here is an example set of inferred interests after browsing the New York Times website.

Google Ads Preferences in a Fresh Instance of Safari
After Browsing the New York Times

Vibrant Media

Vibrant Media is a contextual advertising network that primarily offers in-text and display advertising. We found conclusive evidence that Vibrant deliberately circumvents Safari's third-party cookie blocking feature: one of the URLs involved in the circumvention is for the resource /safari.jsp. The following steps describe the circumvention technology as deployed on answers.com. We observed identical behavior at the various region-specific subdomains of cbslocal.com.

1. Vibrant's main advertising script loads from http://answers.us.intellitxt.com/intellitxt/front.asp? ipid=31690. When the browser has a Safari User-Agent string and no Vibrant cookie, the script includes this code:

```
(function()
{try
{var
e=document.createElement('iframe');e.style.display
='none';e.src='http://answers.us.intellitxt.com/sa
fari.jsp?
t='+(new Date()).getTime();var
b=document.getElementsByTagName('body')[0];b.inser
tBefore(e,b.firstChild);}catch(x){}})();
```

2. The Safari-specific code executes, adding an invisible iframe to the page.

```
<iframe style="display: none;"
src="http://answers.us.intellitext.com/safari.jsp?
t=1328762901524"></iframe>
```

   The Request-URI parameter t is the current time in milliseconds, presumably used to prevent caching.

3. The iframe contains a form and a body onload handler that submits the form.

```
<htmlxhead></headxbody
onload="document.getElementByld('myform').submit()
;"><form
method="post"
action="http://answers.us.intellitxt.com/safari.js
p?
x= l&t=1328762901524"
id="myform"></form></body></html>
```

4. The response to the form contains no content and an instruction to set a Vibrant ID cookie.

```
Set-Cookie:
VM USR=AG75nlrejUwdiE6n3+naS1YAADwZAAA8VQEAAAE1qRi
gFAA-; Domain=.intellitxt.com; Expires=[now + 2
months]; Path=/
```

The Request-URI parameter x=1 appears to control whether the response includes the form page or a Set-Cookie header.

We confirmed that the "VM_USR" cookie is a Vibrant ID by checking the Network Advertising Initiative's cookie status page.

Active Vibrant Media Cookie Status Indicator

We verified that the NAI indicator is based on the presence of a valid "VM_USR" cookie, not the presence of any cookie or any "VM_USR" cookie.

Media Innovation Group

Media Innovation Group (MIG) is an advertising technology provider within the WPP family of companies. MIG's "Zeus Advertising Platform" (ZAP) is WPP's "integrated advertising and analytics platform". According to a report from a vendor, ZAP "is one of the cornerstone products created by MIG" that "provides a holistic view of site analytics and campaign data for a comprehensive understanding of every individual consumer." ZAP "collects and stores over 13 months of historical user-level data and draws from it to provide complex and robust analysis." With ZAP, "MIG is currently tracking the effectiveness of every single advertising element within many live campaigns that reach hundreds of millions of unique users per month…"

We found that some MIG advertising content included a script that circumvents Safari's cookie blocking feature. Here is the relevant part of one such script we discovered at http://b3.mookie1.com/2/B3DM/DLX/1672705484@x71. A few clarifying notes: mookie1.com is a MIG domain (go figure), is_http stores whether the content is loaded over HTTP, and ZAP_id stores the "id" cookie.

```
if(is http) {
  if(ZAP id.indexOf(':') != -1 I I ZAP id == '')
    { var firstTimeSession = 0;

    function submitSessionForm() {
      if (firstTimeSession == 0) {
        firstTimeSession = 1;
        $("#sessionform").submit();
        //setTimeout(processApplication(),2000);
      }
    }

    $("body").append('<iframe id="sessionframe"
name="sessionframe" onload="submitSessionForm()"
src="http://t.mookiel.com/t/vl/imp?"
style="display:none;"></iframexform
id="sessionform"
enctype="application/x-www-form-urlencoded"
action="http://t.mookiel.com/t/vl/imp?"
target="sessionframe" method="POST"></form>');

    function processApplication() {
    }
   }
```

The script creates an invisible iframe and form, then submits the form into the iframe during the onload handler for the iframe.

In response to the form submission, MIG sets cookies and redirects to a 1×1 GIF.

```
$ curl -i -L -X POST
"http://t.mookie1.com/t/v1/imp?"
HTTP/1.1 302 Found
Date: Fri, 17 Feb 2012 09:48:03 GMT
Server: Apache/2.0.52 (Red Hat)
Cache-Control: no-cache
Pragma: no-cache
P3P: CP="NOI DSP COR NID CUR OUR NOR"
Set-Cookie: id=3025894295853070; path=/;
expires=Mon,
18-Mar-13 09:48:03 GMT; path=/;
domain=.mookie1.com
Set-Cookie: mdata=1|3025894295853070|1329472083;
path=/;
expires=Mon, 18-Mar-13 09:48:03 GMT; path=/;
domain=.mookie1.com
Set-Cookie: OAX=nVuS508+IlMACEDl; path=/;
expires=Mon,
18-Mar-13 09:48:03 GMT; path=/;
domain=.mookie1.com
Location: /t/v1/imp/cc?
Content-Length: 277
Connection: close
Content-Type: text/html; charset=iso-8859-1
```

```
HTTP/1.1 200 OK
Date: Fri, 17 Feb 2012 09:48:03 GMT Server:
Apache/2.0.52 (Red Hat) Cache-Control: no-cache
Pragma: no-cache
P3P: CP="NOI DSP COR NID CUR OUR NOR"
Set-Cookie: id=914844815541839; path=/;
expires=Mon, 18-Mar-13 09:48:03 GMT; path=/;
domain=.mookie1.com Set-Cookie:
mdata=1|914844815541839|1329472083; path=/;
expires=Mon, 18-Mar-13 09:48:03 GMT; path=/;
domain=.mookie1.com
Set-Cookie: OAX=T6AK5U8+IlMACoIB; path=/;
expires=Mon, 18-Mar-13 09:48:03 GMT; path=/;
domain=.mookie1.com Content-Length: 35 Connection:
close Content-Type: image/gif

GIF87a???????,D;
```

Comments in MIG's script indicate that "id" is the ZAP ID cookie and "OAX" is the ID cookie for WPP's B3 advertising optimization and custom marketplace product. We verified that the script sets a tracking cookie with MIG's NAI status indicator.

MIG's circumvention code appeared (relatively) infrequently; our crawl of the Alexa U.S. top 500 homepages located it on five sites. It is unclear whether MIG served this script only to Safari users. While we did not see the MIG code in any non-Safari browsers, that may have been due to insufficient sample size; we were not able to reliably cause the MIG code to appear.

That said, we believe it is nevertheless reasonable to infer that MIG's circumvention was intentional. MIG's code appears to be based on widely-cited sample code by web developer Anant Garg. Even Facebook's developer documentation points to the sample.

```
var isSafari =
(/Safari/.test(navigator.userAgent));
var firstTimeSession = 0;

function submitSessionForm() {
    if (firstTimeSession == 0) {
        firstTimeSession = 1;
        $("#sessionform").submit();
        setTimeout(processApplication(),2000);
    }
}
```

```
if (isSafari) {
        $("body").append('<iframe
        id="sessionframe"
name="sessionframe" onload="submitSessionForm()"
src=http://www.yourdomain.com/blank.php
style="display:none;"></iframe><form
id="sessionform"
enctype="application/x-www-form-urlencoded"
action="http://www.yourdomain.com/startsession.php
" target="sessionframe" action="post"></form>');
} else {
    processApplication();
}
function processApplication() {
    alert('Session has been set. Now you can start
your application!');
    }
```

The resemblance is uncanny. The scripts share the *exact same* variable names, structure, logic, and library dependency (jQuery 1.3.2 on Google Libraries). Even more compelling, MIG commented out a line that it didn't need!

PointRoll

PointRoll is a rich media advertising company owned by Gannett. PointRoll's corporate website claims that it "[p]ower[s] 55% of all rich media campaigns online" and "serv[es] over 450 billion impressions for more than two-thirds of the Fortune 500 brands . . . ."

We found that a PointRoll cookie helper script circumvents Safari's cookie blocking. One instance of the script we studied is at http://ads.pointroll.com/PortalServe/?pid=1574300Y14520120126002933&flash=11&time=4|13:53|-8&redir=http://at.atwola.com/adlink/5113/2209587/0/2392/AdId=2327012;BnId=1;itime=219618215;nodecode=yes;link=$CTURL$&pos=s&postal=94305&r=0.18630846054557448

Here's the relevant part of the script. Unlike the other examples, this code was passed through a formatter—it's otherwise unreadable.

```
function submitSessionForm(name) {
    var sessionForm = document.getElementById(name);
    if (typeof (sessionForm) != 'undefined') {
        var txtStatus = document.getElementById('txt ' +
name);
        if (txtStatus.value == 'UNSUBMITTED') {
            txtStatus.value = 'SUBMITTED';
            console.log("form " + name + " Submitted");
            sessionForm.submit();
        }
    }
}
```

```
function prCook(name, value, date, dom) {
    console.log("add form: name=" + name + ":
value=" + value + ": date=" + date + ": dom=" + dom);
    var date = (typeof (date) != "undefined") ? date :
"Fri, 14-Feb-2014 14:47:07 GMT";
    var dom = (typeof (dom) != "undefined") ? dom :
"ads.pointroll.com";
    var sCook = '<iframe id="' + name + ' frame" name="'
+ name + ' frame" onload="submitSessionForm(\'';
    sCook += name;
    sCook += '\')"
src="http://ads.pointroll.com/clients/pointroll/cookie/bl
ank.aspx"
style="display:none;"></iframe>';
    sCook += '<form id="';
    sCook += name;
    sCook += '" style="display:none;"
enctype="application/x-www-form-urlencoded"
action="http://ads.pointroll.com/clients/pointroll/cookie
/drop.ashx"
target="' + name + ' frame" action="post">';
    sCook += '<input type="text" name="name" value="' +
name + '" />';
    sCook += '<input type="text" name="date" value="' +
date + '" />';
    sCook += '<input type="text" name="value" value="' +
value + '" />';
    sCook += '<input type="text" name="domain" value="' +
dom + '" />';
    sCook += '<input type="text" id="txt ';
    sCook += name;
    sCook += '" status" value="UNSUBMITTED" />';
    sCook += '</form>';
    var d = document.createElement('DIV'),
        p = document.getElementsByTagName('BODY');
    d.innerHTML = sCook;
    if (p.length < 1) {
        p = document.getElementsByTagName('HTML');
    }
    p[0].appendChild(d);
```

The script provides a cookie setting function, prCook. When called, the function creates a new div and places within it an invisible iframe and form with the cookie fields specified by the input parameters. An onload handler on the iframe submits the form into the iframe. For example, the call

```
prCook('example cookie name',
'example cookie value', 'Fri, 14-Feb-2014 14:47:07
GMT', 'exampledomain.com')
```

would result in this code being added in a new div element:

```
    <iframe id="example cookie name frame"
    name="example cookie name frame"
    onload="submitsessionForm('example cookie name
')"
    src="http://ads.pointroll.com/clients/pointrol
l/cookie/blank.aspx"
    style="display:none;"></iframe>
    <form id="example cookie name"
style="display:none"
    enctype="application/x-www-form-urlencoded"
    action="http://ads.pointroll.com/clients/point
roll/cookie/drop.ashx"
    target="example cookie name frame"
action="post">
    <input type="text" name="name"
value="example cookie name" />
    <input type="text" name="date" value="Fri, 14-
Feb-2014 14:47:07 GMT" />
    <input type="text" name="value"
value="example cookie value" />
    <input type="text" name="domain"
value="exampledomain.com" />
    <input type="text"
id="txt example cookie name" status"
value="UNSUBMITTED" > </form>
```

Here is the response when the form is submitted.

```
$ curl -i
"http://ads.pointroll.com/clients/pointroll/cookie
/drop.ashx?
name=example cookie name&date=Fri%2C%2014-Feb-
2014%2014%3A47%3A07%20GMT&value=example cookie val
ue&domain=exampledomain.com"

HTTP/1.1 200 OK
Connection: close
Date: Fri, 17 Feb 2012 07:41:13 GMT
Server: Microsoft-IIS/6.0
P3P: CP="NOI DSP COR PSAo PSDo OUR BUS OTC"
Access-Control-Allow-Origin: *
X-AspNet-Version: 2.0.50727
Pragma: no-cache
p3p: CP="IDC DSP COR ADM DEVi TAIi PSA PSD IVAi
IVDi
CONi HIS OUR IND CNT"
Set-Cookie:
example cookie name=example cookie value;
domain=exampledomain.com; expires=Fri, 14-Feb-2014
14:47:07 GMT; path=/
Cache-Control: private
Content-Type: text/html; charset=utf-8
Content-Length: 145

<script>console.log('drop details: cookie
name=example cookie name; cookie
value=example cookie value; cookie
domain=exampledomain.com')
```

The response includes a Set-Cookie header with the values from the form. (And introduces a cross-site scripting vulnerability.)

PointRoll's script includes code for setting 9 cookies.

```
prCook('PRID', 'EC7B3EB9-DE19-4A32-AC07-
83856AB7AE98', 'Fri, 14-Feb-2014 14:47:07 GMT',
'ads.pointroll.com'); prCook('PRbu', 'EuQHJKn7z',
'Fri, 14-Feb-2014 14:47:07 GMT',
'.pointroll.com');
prCook('PRgo', 'BAA', 'Fri, 14-Feb-2014 14:47:07
GMT',
'.pointroll.com');
prCook('PRimp',  '01B90400-2AC9-F37E-0209-
DAC000190101',
'Fri, 14-Feb-2014 14:47:07 GMT',
'ads.pointroll.com');
prCook('PRca', ' IAK5C*37611:1 I#', 'Fri, 14-Feb-
2014
14:47:07 GMT', 'ads.pointroll.com');
prCook('PRcp', ' IAK5CAJmd:1 I#', 'Fri, 14-Feb-
2014
14:47:07 GMT', 'ads.pointroll.com');
prCook('PRpl', ' IFhtv:1 I#', 'Fri, 14-Feb-2014
14:47:07
GMT', 'ads.pointroll.com');
prCook('PRcr', '|GTnd:l|#', 'Fri, 14-Feb-2014
14:47:07
GMT', 'ads.pointroll.com');
prCook('PRpc', ' IFhtvGTnd:1 I#', 'Fri, 14-Feb-
2014
14:47:07 GMT', 'ads.pointroll.com');
```

It would seem reasonable to infer that the two-year "PRID" cookie is PointRoll's unique ID cookie

As with the MIG code, we did not have a large enough sample size to conclusively determine that this script was sent only to Safari browsers. But, again, we were able to deduce that the cookie blocking circumvention was intentional by comparison to Anant Garg's example code. There are several telltale signs of copying

- **Structure** The script is structured in the same way: an onload handler function followed by the iframe and form.
- **Variable Names** Both use the variable sessionForm and the handler function submitSessionForm.
- **HTML Elements** Both use the same attributes, attribute ordering, and coding style in their iframe and form elements. (The PointRoll code includes an additional style attribute in its form element.)
- **POST Bug** If you're still unconvinced, here's the giveaway: the scripts have the same bug Both say action="post" (which does nothing, apparently) instead of method="post" (which sets the form to use the POST method instead of the GET method). The author of the example code corrected himself in a comment

> "action" is correct for the target script in an HTML form. However, there is a second "action" in the code that should be "method" instead: method="post" (not action="post").

We found PointRoll's code on 19 homepages in the Alexa U.S. top 500

Conclusion

When Apple's developers implemented Safari's cookie blocking feature, they were balancing several conflicting design priorities. But one decision was clear: it should prevent advertising companies from tracking the user. As a lead developer noted, whatever the implications for other websites, "I do think it would typically stop, say, doubleclick.net from tracking you . . . ."

Four advertising companies circumvented Apple's protection. Some privacy researchers and advocates have characterized the interplay between third-party web trackers and browser privacy measures as a "cat and mouse game" or "arms race." This research result regrettably affirms that view as reality—for, quite possibly, millions of users

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1 This post does not address the merits of Safari's cookie blocking policy.

2 There are some options for privacy-preserving social personalization. But they are far beyond the scope of this post.